Soar with Eagles: Linking Satellite Networks and Learning Management Systems to Distribute and Manage ADL

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ABSTRACT

Problems with Internet reliability and limitations to data networks have surfaced as major obstacles to content delivery. Internet connectivity is limited and local base firewalls strip files or block transmissions. Bandwidth is limited and usually dedicated to the operational mission. These technical problems are compounded by the expeditionary nature of today's Air Force and the resulting challenge to provide learning opportunities to Airmen in deployed locations.

The Air Force Institute for Advanced Distributed Learning (AFIADL) partnered with Second Air Force to address these problems. The result was a proof of concept for harnessing the capabilities of three Air Force enterprise assets—the Air Technology Network (a satellite interactive television network), the Air Force Integrated Learning Center (a SCORM-conformant learning management system (LMS), ADL object repository, and electronic customer service center), and the Air Force Expeditionary Classroom (deployed learning labs and resource centers). When fully integrated and implemented, the resulting capability—dubbed the *Expeditionary and Global Learning Environment* or *EAGLE*—will provide learning and information on demand.

This paper describes the proposed EAGLE vision, architecture, and fielding plan. Also presented are the results and lessons learned of a proof-of-concept study to determine the ability to successfully migrate content and student data between the master LMS at AFIADL and an LMS at a deployment site via datacasting over the Air Technology Network. This proposal is still conceptual in nature and has not been approved for final deployment.

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INTRODUCTION

"Simply put, the demands on our deployable forces have not diminished and are not expected to decline for some time. We have a new rotational requirement for nearly 20,000 Airmen—about three times the demand prior to September 11, 2001." Those are the recent words of General John P. Jumper, Air Force Chief of Staff. General Jumper also announced longer tour lengths and asked the Major Commands to expand the pool of deployable Airmen. General Jumper indicated that the evolution of the Air and Space Expeditionary Force (AEF) is not a temporary adjustment; rather it is recognition of new demands around the world for air and space power.

Our transition to an expeditionary force has driven the need to synchronize training content and delivery with AEF cycles. That has been the thrust behind the development of the Expeditionary and Global Learning Environment—or EAGLE—concept. Key factors include theater-specific operational requirements, the growing need for on-demand training, and the need to balance the availability of training for our Airmen while deployed and in reconstitution phases of the AEF cycle. In a time when global reach has never been more important, we must provide a method to deliver training to individuals when they need it most … anytime, anywhere.

The EAGLE concept transitions us from Cold War, in-garrison training to a global training mindset. Our vision for global delivery leverages both technological advances and existing worldwide DoD media transmission infrastructure. The good news is that many of the components required to establish an expeditionary, on-demand enterprise delivery system for the United States Air Force currently exist. By leveraging and linking existing global satellite networks, the enterprise learning management system, and the content object repository with expeditionary classrooms, we will be able to reach the desired end state in the most efficient manner.

As Air Force training undergoes vast transformation, the need for effective methods of delivering the right training at the right time and at the right place has never been more evident … it is time for the EAGLE to soar.

EAGLE VISION

Our training world is rapidly changing. Expeditionary operations have become the norm, while we have seen the force shrink by about 40 percent over the last dozen years or so. Those changes have driven an increased focus on training effectiveness and efficiencies with initiatives such as Training Transformation, digitization of technical orders, 1-2-3-day training reduction, the AF Council-Directed Training Review, Air Force Audit Agency Review, and the vision for an Integrated Learning Environment.

In recent years, the DoD Advanced Distributed Learning (ADL) initiative placed an emphasis on making training more accessible via network technologies. However, within the AF there are issues with Internet accessibility, non-standard infrastructure and policy, and saturation levels with training being delivered in an operational environment. Media-rich courseware requires bandwidth that is not available at all locations, since the communication infrastructure is not standard. Additionally, local policy may strip files for security purposes. With the increasing number of courses being delivered via the Internet, we must be concerned about the saturation levels of training being provided in an operational environment.

With existing capabilities, our global reach for delivery of courseware is limited. For example, delivery of the content of one CD through conventional Internet channels can take up to three days, if it goes through at all. INFOCON situations impact the availability and speed at which training can be delivered. We also have firewall security issues that differ from base to base. With mail, we can anticipate three to 30 days before training is delivered to deployed troops, and even then, we are not confident that it is reaching the individual.

Thus, current capabilities are manpower intensive, costly, slow, and unreliable in many instances.

As troops prepare for deployment, they are busy with required training, prepping equipment, weapons qualification, etc. There is little or no time for formal training or professional military education. While deployed, individuals may move from one base to another, a less than desirable infrastructure for training that must be delivered on CD or DVDs. With expanded AEF tour lengths and time off upon completing a tour, we are losing a large part of the year for training opportunities.

We must ask ourselves where we go from here in an effort to deliver "just-in-time" or other types of training to our expeditionary forces in locations where we currently lack Internet access. The answer is—linking the expeditionary classrooms with content management systems utilizing satellite datacasting technology and off-line player technology. We can implement the EAGLE by modifying and linking several systems and capabilities in novel ways.

First, the concept for the Air Force Expeditionary Classroom (AFEC) will standardize electronic classrooms across the Air Force. The AFEC concept includes the technical architecture, personnel requirements, and operational procedures necessary to provide network-based training in a dynamic environment where the "last tactical mile" (Lyman, 2005) is currently unpredictable. The Concept of Operations (Headquarters Second Air Force, 2004) addresses everything from pre-loading training required for deployments, providing reach-back capability via satellite for content updates and any new requirements, classroom configuration, and management of student training data.

Second, the existing satellite network, the Air Technology Network (ATN), can be utilized to support data broadcasting and extending the reach of ADL. This will enable ATN to not only broadcast synchronous training but to send asynchronous ADL Shareable Content Object Reference Model (SCORM) content, and large data files, to deployed locations. Satellite technology provides the high bandwidth requirements for media-rich courseware, and existing Internet limitations would no longer be a major concern in supporting delivery of courseware.

ATN data broadcasting capabilities would not be limited to supporting expeditionary classrooms. The concept is expandable to CONUS locations as well since we currently have ATN connectivity to all AF active duty bases, ANG, and AFRC networks and numerous DoD and federal agencies. Beyond that, this concept is expandable to support classified delivery.

Third, ADL content management, student management, and student records management can be provided by enhancing the learning management system capability of the Air Force Integrated Learning Center (AF-ILC) that also includes an electronic customer service center and an ADL object repository. This concept involves a number of data management issues including reconciling data between remote and central LMSs and successful implementation of off-line SCORM players.

The EAGLE vision is to establish a robust mobile and global learning infrastructure to train Airmen whenever and wherever needed in support of the expeditionary mission. Training can be delivered in a matter of seconds and minutes, as opposed to days, by harnessing the data broadcasting capabilities of satellite technology. Additionally, we can incorporate the ability to transmit student progress data back to the official system of records and learning management system by linking off-line players and remote classroom servers. The EAGLE concept of operations provides commanders with one-stop shopping for training needs.

SYSTEM ARCHITECTURE

The AFEC provides the same functionality as fixed site distance e-learning classrooms, providing a common access point for distance and in-residence training.

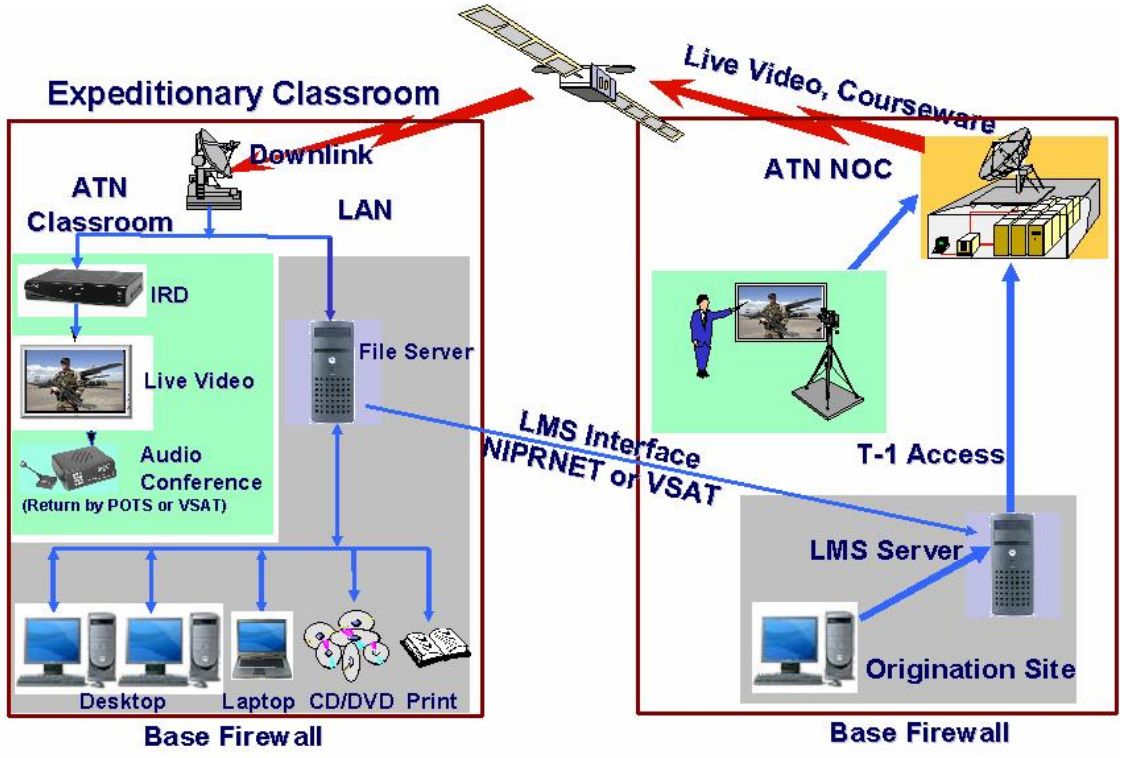

Figure 1. Architecture Overview

Expeditionary Classroom

The AFEC connects to external network resources, including the ATN hardware and software. This connectivity provides access to courseware uploaded from any technical training center to the AF-ILC at Maxwell-Gunter Annex, Alabama. From the AF-ILC, courseware is uploaded to the ATN Broadcast Center at Wright-Patterson AFB, OH for distribution worldwide via satellite. Additionally, connectivity provides access to live broadcasting from any program origination facility to the ATN Broadcast Center for worldwide distribution. The AFEC is configured to operate in two operational environments: deployed mobile and deployed fixed-base sites. Additionally, the AFEC operates in four connectivity configurations: stand-alone Local Area Network (LAN), Metropolitan Area Network (MAN) connected, Wide Area Network (WAN) connected, and remote user workstations.

Uplink Facility

There will be two Air Education and Training Command (AETC) uplink facilities that will provide the expeditionary classroom with AETC courseware, print-on-demand, and live video courses. The uplink at Wright-Patterson AFB, which is the Network Operations Center (NOC) for ATN, will receive course content through terrestrial connectivity with the AF-ILC. Asynchronous courseware will be encapsulated and converted to Internet Protocol (IP) format where necessary, and will be broadcast to any or all downlink sites simultaneously. Live interactive video courses will be transmitted in non-IP format for efficient delivery (reduced image latency) to the expeditionary classroom. The other source of live video programming will originate from Fairchild AFB, WA. It should be noted that ATN, as part of the larger Government Education and Training Network (GETN) which it pioneered, would allow the expeditionary classroom to receive programming from various Federal Government agencies and sister services.

Student Database/Learning Management System (LMS) Management

An Air Force student will be able to enroll in a course via the AF-ILC, through the Learning Center or LMS component. The AF-ILC will serve as the AFEC main hub to host and distribute ADL courseware, track student progress, and assess student performance through electronic testing. The Learning Center will verify that the student is an authorized user and stores and forwards the student's official AF training and educational data to Air Force Personnel Center (AFPC) via MilPDS/OTA. Two configuration packages may be employed to accommodate the deployed conditions

of the AFEC. The first configuration package provides for a subordinate Learning Center (mini LMS) hosted on a deployed server that will connect to the AF-ILC (main hub) and will include an "off-line" capability for SCORM-compliant courseware. The second configuration package will employ only the "off-line" capability with a direct connection with the AF-ILC (main hub). In both configurations, the "off-line" capability will allow a student to enroll and study the courseware when the AFEC cannot connect to the AF-ILC.

Repository Capability

Running in tandem with the Learning Center, on the AF-ILC, is the ADL Repository. This essential component affords the instructor/facilitator on-demand storage and retrieval capabilities for shareable content objects (SCO) and assets used to build ADL courseware (e.g., Flash, graphics, text) or for use in a classroom setting (technology inserts).

Data Origination Capability

The Learning Center serves as the AFEC main hub for version control, hosting, and distributing distance learning courseware; registering, tracking, and reporting student progress; and assessing student performance through electronic testing. The Defense Information System Agency (DISA) hosts and manages the servers and network connections (hardware) while AFIADL manages and operates the Learning Center (software) and serves as the main data (course) origination facility. Data Origination Facilities residing outside the Learning Center domain (e.g., videos, electronic publications) should have a T1 or better connection to the uplink facility at the ATN NOC.

Downlink/Receive Capability

The e-learning classrooms will provide a common access point for live or on-demand training. These facilities will be equipped with satellite downlink with video and data reception capabilities. There will be a file server capable of capturing and storing IP-formatted courseware (including asynchronous video) for use on demand. There will be a LAN connecting the satellite receiver, the file server, and student computers. The student computers could be desktop, laptop, or Personal Digital Assistant (PDA) devices connected through wired lines or wireless LAN. The receive facility should be equipped with a firewall router capable of connecting to an external LAN, MAN, or WAN. In subsequent implementation phases, the classroom will also be equipped with a large screen TV or classroom projection system and audio conference equipment to support live classroom training events.

AFEC Operational Environments

The AFEC is designed to be flexible. In addition to being modular, it may also be permanently fixed and maintained on-site within the Learning Resource Centers (LRCs), already established or proposed at most highly populated deployed sites. The procedures will incorporate pre-deployment activities to identify equipment that will deploy with the unit and be stored in a portable transit case. Pre-deployment activities will include pre-loading of courseware, electronic manuals, and other training materials that will be needed by the unit. The AFEC may be deployed with Air Force expeditionary forces to mobile remote deployment sites. Where available, the AFEC will interface to existing MANs providing all approved users with access to the AFEC courseware. When bandwidth is available, the AFEC may access the Non-Classified Internet Protocol Router Network (NIPRNET) and reach-back to the AF-ILC for student training record updates. It is assumed the equipment will be set up in an environmentally controlled room or tent when deployed to a mobile site.

The AFEC may also be deployed with units to fixed-based site deployment areas. The AFEC may be set up in rooms or tents with suitable electrical power and heating, ventilation, and air conditioning (HVAC). Where available, the AFEC will interface with a MAN providing all approved users with access to the AFEC courseware. When bandwidth is available, the AFEC will access the NIPRNET and reach-back to AF-ILC for student training record updates. All AFEC assets assigned to an Expeditionary Force will be owned and controlled by the deployed bases' education center. All assets assigned to fixed Learning Centers will be permanently maintained at the on-site deployed location.

The base education center will receive an AFEC system from a unit returning from a deployment. The base education center will set up and power on the system. Each equipment component will be tested. If faulty equipment components are found, the base computer/network support organization will take steps to repair them. Once an operational AFEC system has been tested and approved by the base education center it will be re-packed in the transit cases and stored.

SYSTEM HARDWARE, SOFTWARE, AND CONNECTIVIY

Hardware

The AFEC components were chosen based on the requirements to meet or exceed the Air Force hardware standards and the size and weight of the equipment. The AFEC is designed to accommodate a variety of adverse conditions, but it is limited to the specifications of the equipment components. The components were chosen based on their environmental constraints. In some deployment environments, the operating unit may be required to provide supplemental environmental protection and conditioning. All failed equipment will be repaired according to the equipment warranty and the established procedures. The AFEC hardware will be upgraded according to the Air Force refresh cycle.

Each AFEC consists of an ATN satellite antenna, satellite receiver, server, access point, LAN switch, router, printer, and laptop workstations. The satellite receiver captures data through the ATN data broadcasting system. The server receives, stores, and distributes all electronic training courseware and hosts the necessary management tools to monitor student progress. The multimedia laptop workstations provide individual Airmen access to the distance learning courseware. The AFEC system is housed in transit cases. An Air Force unit may deploy with 10 or 20 laptop workstations.

Ruggedized laptop computers connect to an access point, which is also connected to the LAN switch and to a server and a printer. When possible, the AFEC will connect into a locally provided network and use existing reach-back capabilities. The LMS software is responsible for administering electronic courseware and student records. The LMS will be a customizable commercial off-the-shelf (COTS) product based on Air Force standard databases that is capable of synching to the AF-ILC. When in reach-back mode, the AFEC will connect to the AF-ILC via either a Very Small Aperture Terminal (VSAT) or existing terrestrial lines allowing students to update progress data and records and enroll in distance learning courses. Upon course completion, student training records are updated in the AFIADL student training record database. A Virtual Private Network (VPN) concentrator and secure cryptographic units may also be deployed.

Software

The software consists of the operating system software, the LMS, and multimedia courseware. The online student assessment (testing) capability will be supported by the LMS software, which will store the testing database locally on the AFEC server.

While deployed, the expeditionary communication squadron will install software upgrades as directed by the Configuration Control Board (CCB). The expeditionary communication squadron will also load new courseware as it becomes available.

The data broadcasting software integrates satellite reception of the data signal from the downlink with the local server using IP format for storing or streaming. The AFEC will employ the LMS software, which is currently in operation on the Learning Center. The Learning Center is a dynamic online learning and knowledge management infrastructure that integrates courseware delivery, administrative documentation, knowledge mapping, collaboration tools, knowledge capture, and performance management. Depending on the deployed configuration, subordinate Learning Center servers will be preloaded with a replicate, scaled down version (smaller user license) of the LMS in order to communicate and transfer data with the AF-ILC (main hub).

The "off-line" capability configuration will utilize the LMS SCORM Player. This will provide students the capability to download courses from the Learning Center or by loading them directly from a DVD or CD. Students then take courses off-line, and communicate their progress data back to the LMS. Data can be synchronized with the LMS once online connectivity is re-established, or by using exportable media (e.g., CDROM or DVD) to send their data to an administrator with LMS connectivity.

The AFEC will use the latest operating system and application software on the servers and workstations. Internet software will be installed on the server to provide a World Wide Web (WWW) capability for the AFEC. Additional software will be installed on the server to back up information to the data link terminal tape drive. The multimedia courseware will be stored on the AFEC server. An off-line CD library will also be maintained. The local student database stored on the AFEC server will track the daily progress of the individual students who have officially enrolled in a course from the AFEC and are studying courseware while attached to the AFEC LAN.

Connectivity

We are currently faced with challenges when attempting to establish reliable Internet connectivity. There are many challenges associated with delivering much needed training to our deployed personnel.

Communication lines are reaching near saturation points and courseware requires constant, non-interrupted connections to operate. Media-rich courseware requires bandwidth to be effectively delivered, yet many of our deployed locations have bandwidth limitations. Even in cases where connectivity is available, firewalls can strip files or block transmission of necessary traffic. According to the specification, the AFEC equipment will be used in one of four connectivity configurations. Every AFEC is configured to facilitate transformation of a stand-alone AFEC to either a MAN-connected or WAN-connected AFEC, or vice versa.

The AFEC will conduct stand-alone operations when the laptops are connected to the AFEC LAN and the LAN is not connected to an external network. The LMS will operate off-line in this configuration. The AFEC will conduct MAN operations when it is deployed to a location that prohibits connection to a WAN, but enables MAN users to connect to the AFEC LAN. Connectivity to the MAN will be accomplished by connecting the router or LAN switch to the MAN. The router provides the ability to connect the AFEC to the MAN via one of two available Fast Ethernet ports, a serial port, or an asynchronous transfer mode port. It is anticipated that Fast Ethernet will be the primary interface to the MAN; however, the inclusion of a serial interface will provide the possibility to integrate the system with many existing tactical systems. The LMS will operate off-line when the AFEC is in this configuration.

WAN-connected or reach-back is defined herein as intermittent (as opposed to continuous), secure, TCP/IP access to external network resources. When in reach-back mode, the AFEC will operate on a two-way ATN data broadcasting configuration. The design of the AFEC external connection does not supply any in-line network encryption devices. All reach-back capability will be accomplished via the MAN interface and will be configured by the operating unit.

Laptops that are unable to connect to the AFEC WLAN due to distance or interferences are operating as a remote off-line workstation. An Air Force unit education Training Manager or Training NCO may choose to allow Airmen to load courseware on laptops and study the course at a location outside of the AFEC LAN footprint.

The AFEC will use Fast Ethernet as the primary WLAN/MAN connection. According to the functional specification, 100 Base-T Ethernet connectivity will be used for the connection to most land-based deployed infrastructures. The router also will support a connection to an ATM backbone via multi-mode fiber.

PROOF OF CONCEPT AND FIELDING PLAN

Progress to Date

The EAGLE concept is complementary with two existing initiatives—one involving the expansion of Learning Resource Centers (LRCs) at deployed locations and the expansion of the ATN to SWA. This concept can utilize existing resources already in place. The existing initiative within Air Combat Command (ACC) is to set up LRCs at deployed locations and to use satellite technology to deliver information. Currently ACC has seven manned LRCs deployed. The EAGLE concept offers the additional capability to use satellite technology to deliver courses and ADL content to the theater, to administer courses on networked or stand-alone computers that are configured to run SCORM content, and to synchronize data back to the AF-ILC LMS. The proposed Al Udeid LRC is being developed to service a population over 8,000. The CENTAF vision is that these LRCs will be large scale and state of the art. EAGLE will leverage the LRCs and launch the ability to provide state-of-the-art training and education on a global scale.

The ATN program management office (PMO) is in the process of expanding the reach of the Air Technology Network. Connectivity with Telstar 12, managed by DoD's Global Broadcast Service, will allow ATN to reach beyond Western Europe to the CENTAF AOR at no additional cost for transmission. (ATN currently reaches the Western Pacific via commercial satellite at a cost of $87,000 per year for one 1.5Mbps channel.)

In a previous test, the ATN PMO completed a CONUS proof of concept in June of 2000 when they transmitted data from the four CDs required for the A/S32P-23 Fire Truck Operations Course from a commercial uplink in Atlanta, GA to a Lackland AFB, TX server. The course was viewed on local personal computers (PCs) with no problems noted.

In an effort to validate the need for training opportunities, survey tools were developed and approved by AFPC and targeted to personnel who returned from overseas-deployed locations between January 1, 2003 and March 30, 2004. A separate survey tool was administered to returning commanders simultaneously. The survey results will assist in developing the actual need for training in these deployed locations and narrow the focus to specific training needs. The Personnel Readiness Functions at Military Personnel Flights will be responsible for

tracking and monitoring survey completions. A follow-on survey has been proposed for implementation across Commands to allow for expansion of the need for Command-specific training in theater.

When implemented, EAGLE will provide training for deployed forces in many of the world's hot spots. The EAGLE proof-of-concept test must ultimately show that required content can be transmitted via ATN datacasting and that bi-directional connectivity with an LMS can be implemented successfully at one of these deployed locations. Modifying the existing satellite infrastructure of ATN will allow for IP streaming, large file transfer, and ultimately the extension of the AF-ILC (Learning Center or LMS) to areas that have limited access to the Internet. Once this is accomplished, the content residing on the AF-ILC can be "pushed" to remote locations via the ATN. By using the off-line player, the content can be distributed to laptops, which gives added flexibility to warfighters.

Proof of Concept Methodology

The proof-of-concept study (AFIADL & Vertex, 2005) seeks to evaluate bi-directional datacasting of data between distant-end LMSs and the AF-ILC, or centralized hub. Both the ATN and the AF-ILC are managed by the Air Force Institute for Advanced Distributed Learning.

To accomplish the proof-of-concept test, AFIADL hired Vertex Solutions. Vertex is evaluating the systems and networks used by AFIADL: Meridian KSI Version 4.1, Oracle 8i and 9i, Intelsat Ku-band IA 6, Global Broadcast Service Ku-band Telstar 12, and PanAmSat C-band Telstar 10.

In order to determine the viability of a proposed methodology, Vertex will replicate the ATN network topography in a test environment. This consists of two separate and segregated Microsoft Internet Locator Service Web servers on which the Meridian LMS is installed and configured. The server intended to replicate the AF-ILC, or master LMS, will be networked to an Oracle 9i database server to provide the application data. The server that replicates the remote LMSs will have installed an Oracle 8i database server to provide the application data.

The proof of concept is defined by the successful transfer and merging of data between the two servers in a manner that is able to be replicated in the AFIADL environment. This requires the propagation of course data from the central LMS to the remote LMSs and the synchronization of user data from the remote LMSs to the central LMS. Successful transfer of data will be determined by examination of both databases following execution of the proof-of-concept methodology.

Datacasting Transmission Issues

As a first step, we are testing a limited footprint; one test bed has been identified and a stand-alone system is being configured and evaluated for connectivity and reliability. The EAGLE project team coordinated with the appropriate communication and information representative to gain appropriate certificates to operate and connect to AF systems. This certification enables testing of server storage and data transmission.

Also evaluated will be data identification, data extraction, file consolidation for transfer, file decryption, data insertion, and the central solution components and dependencies.

Data Management: LMS to Content Server Communications

The central to distributed communications channel leverages the existing capabilities of the ATN. However, the ATN uplink is in a location separate from the central instance, thereby requiring a two-leg journey for data targeted at distributed instances. For both communications segments, the data will be consolidated in a single archive file.

Seamless transportation between Maxwell AFB and the uplink located at Wright-Patterson AFB was prevented by network configuration at Wright-Patterson. Until ATN receives a Certificate of Noteworthiness to connect to the AF network, and enough bandwidth is dedicated to effect large file transfer to the uplink, the data will require a physical transport to the encapsulator. Once received, ATN will broadcast the data to the target distributed instances, at which point the data will be transported to the distributed instance Web server either electronically or physically, depending on specific network configurations.

Data Management: Off-line Player to LMS

The distributed to central communications channel is hindered by the network configurations surrounding each LMS instance. Because no instance is externally visible, more elegant and automated communications methodologies cannot be implemented as part of the test. The communications channel for distributed to central instances is thus a manual process in which both ends of the channel require intervention from a user and the copying or pasting of the XML data file to or from the LMS Web server file system. This piece of

the test will require different approaches and additional study.

Operational Phases

During this initial phase, EAGLE will be co-located in already established LRCs at identified locations. The equipment will be clearly separated from the already available equipment offered by the LRC. The distinction of the equipment and its intended use is vital to the success of the concept. This equipment will be dedicated solely to the training needs of the personnel serviced by the LRC and is not to be confused with equipment that is operational in nature. During Phase I, a core of training will be offered immediately. Available training will be determined based on results of data received via the survey tools. Skills training and theater-specific training also will be available during implementation of Phase I. A list of potential courses available for delivery to an AFEC via EAGLE is available. This training will be identified during the review of the mission of the area in which the LRC is located. For instance, if the mission at Base X requires aircraft-specific support, the training available at that location will be tailored to meet the needs of the maintainers and aircrews of those specific aircraft. Conversely, if Base Y has a large population of medical personnel, training would be available on theater-specific diseases and concerns, as well as medical references and certification training.

During follow-up phases, efforts to create a stand-alone expeditionary classroom will be made. Ideally, the facility would remain in close proximity with the existing LRC and could still be co-located as long as expansion was possible. Creating an actual expeditionary classroom, complete with up-to-date classroom innovations would set the stage for the long-term presence of in-theater training. Mobile training teams could also be dispatched to conduct operations on the ground with all necessary classroom support materials and equipment already deployed. During this phase, delivery of classified material would also be a focus. As an example, the Joint Personnel and Recovery Agency deploys mobile training teams to provide specialized Code of Conduct refresher training to Air Force units composed of personnel with a high risk of capture by enemy forces. This training is conducted using classified materials and is a viable candidate for inclusion in this phase since it could eliminate the need for funding of the mobile training teams. During this operational phase, satellite datacasting will be used to effectively provide access to formal education opportunities.

The system will be monitored and validated through an operational feedback continuum. Adjustments and improvements will be implemented accordingly based on feedback provided by participants at every level beginning with the proof-of-concept test and the initial implementation of EAGLE. Participants will include, but are not limited to, network systems administrators, on-site facilitators, AFIADL LMS personnel, ATN Program Managers, instructors, and students.

RESULTS

The results of the proof-of-concept test, along with a video on datacasting and the EAGLE concept produced by Headquarters, Second Air Force, will be presented at the December 2005 meeting of I/ITSEC. The results and the video will also be available through the AFIADL website at http://www.au.af.mil/au/afiadl.

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